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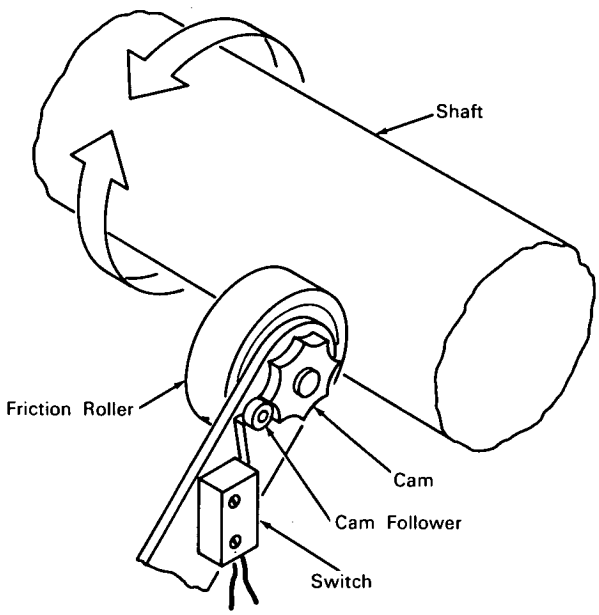
October 1964

Brief 64-10006

NASA TECH BRIEF

This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the space program.

Speed-Sensing Device Aids Crane Operators



The problem: Crane operators must frequently judge payload movements precisely. This is especially true when hoisting around towers, gantries, antennas, bridge support members, and other structures which obstruct vision from the crane cab. During many such operations, standard practice involves a relay man who transmits hand signals to the crane operator. Some speed-sensing device is needed here since excessive speeds at impact or the exact moment of lift may damage the load, a mating part, or an adjoining structure.

The solution: A speed-sensing device that produces visual and audible signals in the crane cab to indicate rate of load movement.

How it's done: A multilobed cam is friction-driven by the cable-drum drive shaft. The cam engages a follower to operate a switch that energizes both a buzzer and indicator lamp in the crane cab. The frequency of the buzzer and lamp accurately indicates movement of the load to very small increments. A sensor has been developed with a sensitivity to hoist movement of 1/8 inch. If cable reeving is changed, a different cam with an appropriate number of lobes is substituted to retain the approximate ratio between drum speed and load movement.

Notes:

1. The varying amount of cable on the drum has negligible effect on system accuracy and sensitivity.

(continued overleaf)

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2. Audible signals tend to be more useful to the operator but a visual monitor is useful in high ambient noise.
3. Estimated fabrication cost, including time and materials, is less than $100.
4. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Wallops Station
   Wallops Island, Virginia, 23337
   Reference: B64-10006

Patent status: This innovation was developed by a NASA employee, Edward L. McFord, and if patented, commercial rights will belong to him. Inquiries about obtaining such rights may be made directly to Mr. McFord at Wallops Station, Virginia, 23337.

Source: Wallops Station (WS-4)